

WHAT IS CLAIMED IS:

1. A method for producing a liquid discharge head including:

a discharge energy generating element for
5 generating energy for discharging a liquid droplet;

an element substrate provided with said
discharge energy generating element on a principal
plane thereof; and

an orifice substrate provided with a discharge
10 port portion including a discharge port for
discharging a liquid droplet, a bubble generating
chamber for generating a bubble in a liquid therein
by said discharge energy generating element, a nozzle
including a supply path for supplying said bubble
15 generating chamber with the liquid, and a supply
chamber for supplying said nozzle with the liquid,
and adjoined to the principal plane of said element
substrate, the method comprising:

a step of coating, on the element substrate in
20 which said discharge energy generating element is
provided on the principal plane, a solvent-soluble
thermally crosslinkable organic resin for forming a
pattern of a first bubble generating chamber and a
first flow path and heating the resin thereby forming
25 a thermally crosslinked film;

a step of coating, on said thermally
crosslinked film, a solvent-soluble organic resin for

forming a pattern of a second bubble generating chamber and a second flow path;

a step of forming, in said organic resin, a second flow path pattern of a smaller height than in said second bubble generating chamber simultaneously with a pattern of said second bubble generating chamber, by employing a locally different exposure amount;

a step of laminating a negative-working organic resin layer on said thermally crosslinked film and said patterned organic resin and forming said discharge port portion in said negative-working organic resin layer; and

a step of removing said thermally crosslinked film and said patterned organic resin.

2. A method for producing a liquid discharge head according to claim 1, wherein the pattern of the second flow path having a lower height than in said second bubble generating chamber is formed by an exposure of said organic resin, employing a slit mask having a slit pitch and the developing said organic resin.

3. A method for producing a liquid discharge head according to claim 1, wherein the pattern of said second bubble generating chamber and said second

flow path is formed, after an exposure-development step through a mask, by a formation of an inclination of 10° to 45° by the application of a temperature.

- 5 4. A method for producing a liquid discharge head according to claim 2, wherein said second flow path pattern is formed with two or more step differences by exposing and developing said organic resin, utilizing a mask having different slit pitches.

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5. A method for producing a liquid discharge head including:

a discharge energy generating element for generating energy for discharging a liquid droplet;

- 15 an element substrate provided with said discharge energy generating element on a principal plane thereof; and

an orifice substrate provided with a discharge port portion including a discharge port for

- 20 discharging a liquid droplet, a bubble generating chamber for generating a bubble in a liquid therein by said discharge energy generating element, a nozzle including a supply path for supplying said bubble generating chamber with the liquid, and a supply
25 chamber for supplying said nozzle with the liquid, and adjoined to the principal plane of said element substrate, the method comprising:

a step of coating, on the element substrate in which said discharge energy generating element is provided on the principal plane, a solvent-soluble thermally crosslinkable organic resin for forming a
5 pattern of a first bubble generating chamber and a first flow path and heating the resin thereby forming a thermally crosslinked film;

a step of coating, on said thermally crosslinked film, a solvent-soluble organic resin for
10 forming a pattern of a second bubble generating chamber and a second flow path;

a step of exposing and developing said organic resin employing a slit mask having partially different slit pitches and a near-UV light, in order
15 to form a pattern of said second bubble generating chamber and a second flow path having different plural heights;

a step of heating said organic resin, subjected to the pattern formation by exposure and development,
20 at a temperature not exceeding a glass transition point thereby form an inclination of 10° to 45°;

a step of exposing and developing said thermally crosslinked film employing a deep-UV light of a region of 200 to 300 nm;

25 a step of coating, exposing, developing and heating a negative-working organic resin on the flow path pattern formed by said two-layered solvent-

soluble film, thereby laminating said orifice
substrate having said discharge port portion; and
a step of irradiating, through said orifice
substrate, the underlying two-layered organic resin
5 for forming the flow path with a deep-UV light,
followed by removal with a solvent, thereby forming
said orifice substrate including said discharge port
portion for discharging a liquid droplet, said bubble
generating chamber in which the bubble is generated
10 by said discharge energy generating element, said
nozzle having said supply path for supplying said
bubble generating chamber with the liquid, and said
supply chamber for supplying said nozzle with the
liquid, and adjoined to the principal plane of said
15 element substrate.

6. A producing method for a liquid discharge
head according to claim 5, wherein said first flow
path is formed with a height of 5 to 20 μm on said
20 element substrate and with an inclination of 0° to
 10° with respect to a plane perpendicular to the
principal plane of said element substrate.